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Search Results - Record(s) 1 through 20 of 62 returned.

1. Document ID: US 20020164751 A1

L8: Entry 1 of 62 File: PGPB Nov 7, 2002

PGPUB-DOCUMENT-NUMBER: 20020164751
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020164751 A1

TITLE: Enzymes having thermostable phosphatase activity and methods of use thereof

PUBLICATION-DATE: November 7, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Mathur, Eric J.	Carlsbad	CA	US	
Lee, Edd	Solana Beach	CA	US	
Bylina, Edward	San Diego	CA	US	

US-CL-CURRENT: 435/196; 435/320.1, 435/325, 435/6, 435/69.1, 536/23.2, 702/20

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. Desc | Image

2. Document ID: US 20020164618 A1

L8: Entry 2 of 62 File: PGPB Nov 7, 2002

PGPUB-DOCUMENT-NUMBER: 20020164618
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020164618 A1

TITLE: Enzymes having high temperature polymerase activity and methods of use thereof

PUBLICATION-DATE: November 7, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Callen, Walter	San Diego	CA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 435/6; 702/20

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. Desc | Image

☐ 3. Document ID: US 20020164580 A1

L8: Entry 3 of 62 File: PGPB Nov 7, 2002

PGPUB-DOCUMENT-NUMBER: 20020164580
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020164580 A1

TITLE: Combinatorial screening of mixed populations of organisms

PUBLICATION-DATE: November 7, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	

US-CL-CURRENT: 435/4; 435/6

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. Desc | Image

☐ 4. Document ID: US 20020160464 A1

L8: Entry 4 of 62 File: PGPB Oct 31, 2002

PGPUB-DOCUMENT-NUMBER: 20020160464
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020160464 A1

TITLE: Enzymes having alpha-galactosidase activity and methods of use thereof

PUBLICATION-DATE: October 31, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Murphy, Dennis	Malvern	PA	US	
Reid, John	Ardmore	PA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 435/105

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. Desc | Image

☐ 5. Document ID: US 20020155486 A1

L8: Entry 5 of 62 File: PGPB Oct 24, 2002

PGPUB-DOCUMENT-NUMBER: 20020155486
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020155486 A1

TITLE: Enzymes having alpha-galactosidase activity and methods of use thereof

PUBLICATION-DATE: October 24, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Murphy, Dennis	Malvern	PA	US	
Reid, John	Ardmore	PA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 435/6; 702/19, 702/20

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 6. Document ID: US 20020150997 A1

L8: Entry 6 of 62 File: PGPB Oct 17, 2002

PGPUB-DOCUMENT-NUMBER: 20020150997
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020150997 A1

TITLE: Enzymes having alpha-galactosidase activity and methods of use thereof

PUBLICATION-DATE: October 17, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Murphy, Dennis	Malvern	PA	US	
Reid, John	Ardmore	PA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 435/91.2; 435/320.1, 435/464, 435/6, 435/69.1, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 7. Document ID: US 20020150949 A1

L8: Entry 7 of 62 File: PGPB Oct 17, 2002

PGPUB-DOCUMENT-NUMBER: 20020150949
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020150949 A1

TITLE: High throughput screening for novel enzymes

PUBLICATION-DATE: October 17, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Keller, Martin	San Diego	CA	US	

US-CL-CURRENT: 435/7.1; 435/455, 435/7.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
Draw Desc | Image

☐ 8. Document ID: US 20020146799 A1

L8: Entry 8 of 62 File: PGPB Oct 10, 2002

PGPUB-DOCUMENT-NUMBER: 20020146799
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020146799 A1

TITLE: Enzymes having esterase activity and methods of use thereof

PUBLICATION-DATE: October 10, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Robertson, Dan E.	Solana Beach	CA	US	
Murphy, Dennis	Malvern	PA	US	
Reid, John	Ardmore	PA	US	
Maffia, Anthony M. III	Wilmington	DE	US	
Link, Steven	Wilmington	DE	US	
Swanson, Ronald	Del Mar	CA	US	
Warren, Patrick V.	Coatesville	PA	US	
Kosmatka, Anna	Doylestown	PA	US	

US-CL-CURRENT: 435/196; 435/320.1, 435/325, 435/6, 435/69.1, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 9. Document ID: US 20020146762 A1

L8: Entry 9 of 62 File: PGPB Oct 10, 2002

PGPUB-DOCUMENT-NUMBER: 20020146762
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020146762 A1

TITLE: End selection in directed evolution

PUBLICATION-DATE: October 10, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Frey, Gerhard Johann	San Diego	CA	US	

US-CL-CURRENT: 435/69.1; 435/440, 435/5, 435/69.7, 435/7.6, 530/350, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 10. Document ID: US 20020142394 A1

L8: Entry 10 of 62 File: PGPB Oct 3, 2002

PGPUB-DOCUMENT-NUMBER: 20020142394
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020142394 A1

TITLE: Exonuclease-mediated gene assembly in directed evolution

PUBLICATION-DATE: October 3, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	

US-CL-CURRENT: 435/69.1; 530/350, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 11. Document ID: US 20020137185 A1

L8: Entry 11 of 62 File: PGPB Sep 26, 2002

PGPUB-DOCUMENT-NUMBER: 20020137185
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020137185 A1

TITLE: Enzymes having amidase activity and methods of use thereof

PUBLICATION-DATE: September 26, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay	Rancho Santa Fe	CA	US	
Mathur, Eric	Carlsbad	CA	US	
Murphy, Dennis	Malvern	PA	US	
Reid, John	Ardmore	PA	US	
Robertson, Dan	Solana Beach	CA	US	

US-CL-CURRENT: 435/228; 435/320.1, 435/325, 435/6, 435/69.1, 536/23.2, 702/19

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 12. Document ID: US 20020137171 A1

L8: Entry 12 of 62 File: PGPB Sep 26, 2002

PGPUB-DOCUMENT-NUMBER: 20020137171
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020137171 A1

TITLE: Hydrolase enzymes and their use in kinetic resolution

PUBLICATION-DATE: September 26, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay	Rancho Santa Fe	CA	US	
Mathur, Eric J.	Carlsbad	CA	US	
Baumann, Markus	Stuttgart		DE	
Bornscheuer, Uwe T.	Greifswald		DE	

US-CL-CURRENT: 435/196; 435/320.1, 435/325, 435/69.1, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 13. Document ID: US 20020137116 A1

L8: Entry 13 of 62 File: PGPB Sep 26, 2002

PGPUB-DOCUMENT-NUMBER: 20020137116
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020137116 A1

TITLE: Enzymes having alpha-galactosidase activity and methods of use thereof

PUBLICATION-DATE: September 26, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Murphy, Dennis	Malvern	PA	US	
Reid, John	Ardmore	PA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 435/18; 435/207

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 14. Document ID: US 20020136754 A1

L8: Entry 14 of 62 File: PGPB Sep 26, 2002

PGPUB-DOCUMENT-NUMBER: 20020136754
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020136754 A1

TITLE: Recombinant bacterial phytases and uses thereof

PUBLICATION-DATE: September 26, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Kretz, Keith A.	San Marcos	CA	US	
Gray, Kevin A.	San Diego	CA	US	
Barton, Nelson Robert	San Diego	CA	US	
Garrett, James B.	Poway	CA	US	
O' Donoghue, Eileen	San Diego	CA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 424/442; 426/53

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

☐ 15. Document ID: US 20020132997 A1

L8: Entry 15 of 62 File: PGPB Sep 19, 2002

PGPUB-DOCUMENT-NUMBER: 20020132997
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020132997 A1

TITLE: Enzymes having high temperature polymerase activity and methods of use thereof

PUBLICATION-DATE: September 19, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Callen, Walter	San Diego	CA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 536/23.2; 435/199, 435/6, 435/69.1, 702/20

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

☐ 16. Document ID: US 20020132308 A1

L8: Entry 16 of 62 File: PGPB Sep 19, 2002

PGPUB-DOCUMENT-NUMBER: 20020132308
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020132308 A1

TITLE: Novel constructs and their use in metabolic pathway engineering

PUBLICATION-DATE: September 19, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Liu, Lu	Redwood City	CA	US	
Zhu, Genhai	San Jose	CA	US	

US-CL-CURRENT: 435/91.2; 435/468

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 17. Document ID: US 20020132295 A1

L8: Entry 17 of 62 File: PGPB Sep 19, 2002

PGPUB-DOCUMENT-NUMBER: 20020132295
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020132295 A1

TITLE: Enzymes having transaminase and aminotransferase activity and methods of use thereof

PUBLICATION-DATE: September 19, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Warren, Patrick V.	Philadelphia	PA	US	
Swanson, Ronald V.	Media	PA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 435/69.1; 435/128, 435/193, 435/320.1, 435/325, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 18. Document ID: US 20020132243 A1

L8: Entry 18 of 62 File: PGPB Sep 19, 2002

PGPUB-DOCUMENT-NUMBER: 20020132243
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020132243 A1

TITLE: Enzymes having high temperature polymerase activity and methods of use thereof

PUBLICATION-DATE: September 19, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Callen, Walter	San Diego	CA	US	
Mathur, Eric J.	Carlsbad	CA	US	
Short, Jay	Rancho Santa Fe	CA	US	

US-CL-CURRENT: 435/6; 435/199, 435/320.1, 435/325, 435/69.1, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 19. Document ID: US 20020127560 A1

L8: Entry 19 of 62 File: PGPB Sep 12, 2002

PGPUB-DOCUMENT-NUMBER: 20020127560
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020127560 A1

TITLE: High throughput screening for novel enzymes

PUBLICATION-DATE: September 12, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Keller, Martin	San Diego	CA	US	

US-CL-CURRENT: 435/6; 435/471, 435/7.32

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 20. Document ID: US 20020120118 A1

L8: Entry 20 of 62 File: PGPB Aug 29, 2002

PGPUB-DOCUMENT-NUMBER: 20020120118
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020120118 A1

TITLE: Enzymes having endoglucanase activity and methods of use thereof

PUBLICATION-DATE: August 29, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Lam, David E.	Carlsbad	CA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 536/23.2; 435/200, 435/320.1, 435/325, 435/6, 435/69.1, 536/123.12

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

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L6 and (polyketide synthase or polyketide synthetase)	62

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☐ 21. Document ID: US 20020120108 A1

L8: Entry 21 of 62 File: PGPB Aug 29, 2002

PGPUB-DOCUMENT-NUMBER: 20020120108
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020120108 A1

TITLE: Enzymes having alpha-galactosidase activity and methods of use thereof

PUBLICATION-DATE: August 29, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Murphy, Dennis	Malvern	PA	US	
Reid, John	Ardmore	PA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 530/388.26; 536/23.53

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 22. Document ID: US 20020119550 A1

L8: Entry 22 of 62 File: PGPB Aug 29, 2002

PGPUB-DOCUMENT-NUMBER: 20020119550
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020119550 A1

TITLE: Enzymes having alpha-galactosidase activity and methods of use thereof

PUBLICATION-DATE: August 29, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Murphy, Dennis	Malvern	PA	US	
Reid, John	Ardmore	PA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 435/207; 435/320.1, 435/325, 435/6, 435/69.1, 536/23.2, 702/20

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 23. Document ID: US 20020119515 A1

L8: Entry 23 of 62 File: PGPB Aug 29, 2002

PGPUB-DOCUMENT-NUMBER: 20020119515
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020119515 A1

TITLE: Enzymes having alpha-galactosidase activity and methods of use thereof

PUBLICATION-DATE: August 29, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Murphy, Dennis	Malvern	PA	US	
Reid, John	Ardmore	PA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 435/41; 435/105, 435/207, 435/7.1, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 24. Document ID: US 20020119457 A1

L8: Entry 24 of 62 File: PGPB Aug 29, 2002

PGPUB-DOCUMENT-NUMBER: 20020119457
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020119457 A1

TITLE: End selection in directed evolution

PUBLICATION-DATE: August 29, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Frey, Gerhard Johann	San Diego	CA	US	

US-CL-CURRENT: 435/6; 435/69.1, 530/350, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 25. Document ID: US 20020115108 A1

L8: Entry 25 of 62 File: PGPB Aug 22, 2002

PGPUB-DOCUMENT-NUMBER: 20020115108
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020115108 A1

TITLE: Enzymes having high temperature polymerase activity and methods of use thereof

PUBLICATION-DATE: August 22, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Callen, Walter	San Diego	CA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 435/7.1; 530/388.26

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 26. Document ID: US 20020115100 A1

L8: Entry 26 of 62 File: PGPB Aug 22, 2002

PGPUB-DOCUMENT-NUMBER: 20020115100
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020115100 A1

TITLE: Enzymes having alpha-galactosidase activity and methods of use thereof

PUBLICATION-DATE: August 22, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Murphy, Dennis	Malvern	PA	US	
Reid, John	Ardmore	PA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 435/6; 702/20

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 27. Document ID: US 20020115099 A1

L8: Entry 27 of 62 File: PGPB Aug 22, 2002

PGPUB-DOCUMENT-NUMBER: 20020115099
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020115099 A1

TITLE: Enzymes having alpha-galactosidase activity and methods of use thereof

PUBLICATION-DATE: August 22, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Murphy, Dennis	Malvern	PA	US	
Reid, John	Ardmore	PA	US	
Mathur, Eric J.	Carlsbad	CA	US	

US-CL-CURRENT: 435/6; 702/20

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 28. Document ID: US 20020102680 A1

L8: Entry 28 of 62 File: PGPB Aug 1, 2002

PGPUB-DOCUMENT-NUMBER: 20020102680
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020102680 A1

TITLE: Catalases

PUBLICATION-DATE: August 1, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Robertson, Dan E.	Solana Beach	CA	US	
Sanyal, Indrajit	Bethesda	MD	US	
Adhikari, Robert	Voorhees	NJ	US	

US-CL-CURRENT: 435/183; 435/320.1, 435/325, 435/69.1, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 29. Document ID: US 20020081665 A1

L8: Entry 29 of 62 File: PGPB Jun 27, 2002

PGPUB-DOCUMENT-NUMBER: 20020081665
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020081665 A1

TITLE: Bryostatins, bryopyrans and polyketides: compositions and methods

PUBLICATION-DATE: June 27, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Haygood, Margo	La Jolla	CA	US	
Davidson, Seana K.	La Jolla	CA	US	
Allen, Scott W.	San Diego	CA	US	
Hildebrand, Mark	La Jolla	CA	US	

US-CL-CURRENT: 435/76; 435/252.3, 435/6, 514/27, 514/28, 536/23.2, 536/7.1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 30. Document ID: US 20020068340 A1

L8: Entry 30 of 62 File: PGPB Jun 6, 2002

PGPUB-DOCUMENT-NUMBER: 20020068340
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020068340 A1

TITLE: COMBINATORIAL ENZYME DEVELOPMENT

PUBLICATION-DATE: June 6, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
SHORT, JAY M.	Encinitas	CA	US	

US-CL-CURRENT: 435/183; 435/6, 435/69.1, 536/23.1, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 31. Document ID: US 20020045226 A1

L8: Entry 31 of 62 File: PGPB Apr 18, 2002

PGPUB-DOCUMENT-NUMBER: 20020045226
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020045226 A1

TITLE: Enzymes having alpha-galactosidase activity and methods of use thereof

PUBLICATION-DATE: April 18, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Murphy, Dennis	Malvern	PA	US	
Reid, John	Ardmore	PA	US	

US-CL-CURRENT: 435/128; 435/227, 435/6, 530/387.1, 564/506, 702/19

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 32. Document ID: US 20020045177 A1

L8: Entry 32 of 62 File: PGPB Apr 18, 2002

PGPUB-DOCUMENT-NUMBER: 20020045177
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020045177 A1

TITLE: Microorganism genomics, compositions and methods related thereto

PUBLICATION-DATE: April 18, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Handelsman, Jo	Madison	WI	US	
Goodman, Robert M.	Madison	WI	US	
Rondon, Michelle R.	Madison	WI	US	

US-CL-CURRENT: 435/6; 435/29, 435/320.1, 435/41

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
Draw Desc | Image

☐ 33. Document ID: US 20020037505 A1

L8: Entry 33 of 62 File: PGPB Mar 28, 2002

PGPUB-DOCUMENT-NUMBER: 20020037505
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020037505 A1

TITLE: Sequence based screening

PUBLICATION-DATE: March 28, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	

US-CL-CURRENT: 435/6; 435/91.2, 536/23.1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 34. Document ID: US 20020031771 A1

L8: Entry 34 of 62 File: PGPB Mar 14, 2002

PGPUB-DOCUMENT-NUMBER: 20020031771
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020031771 A1

TITLE: Sequence based screening

PUBLICATION-DATE: March 14, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	

US-CL-CURRENT: 435/6; 702/20

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
Draw Desc | Image

☐ 35. Document ID: US 20020028448 A1

L8: Entry 35 of 62 File: PGPB Mar 7, 2002

PGPUB-DOCUMENT-NUMBER: 20020028448
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020028448 A1

TITLE: SCREENING FOR NOVEL COMPOUNDS WHICH REGULATE BIOLOGICAL INTERACTIONS

PUBLICATION-DATE: March 7, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
SHORT, JAY M.	RANCHO SANTA FE	CA	US	

US-CL-CURRENT: 435/6; 435/7.1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 36. Document ID: US 20020025517 A1

L8: Entry 36 of 62 File: PGPB Feb 28, 2002

PGPUB-DOCUMENT-NUMBER: 20020025517
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020025517 A1

TITLE: METHODS AND COMPOSITIONS FOR CELLULAR AND METABOLIC ENGINEERING

PUBLICATION-DATE: February 28, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
MINSHULL, JEREMY	SAN FRANCISCO	CA	US	
STEMMER, WILLEM P. C.	LOS GATOS	CA	US	

US-CL-CURRENT: 435/6; 435/91.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 37. Document ID: US 20020012974 A1

L8: Entry 37 of 62 File: PGPB Jan 31, 2002

PGPUB-DOCUMENT-NUMBER: 20020012974
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020012974 A1

TITLE: Methods for producing enantiomerically pure alpha-substituted carboxylic acids

PUBLICATION-DATE: January 31, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Madden, Mark	La Mesa	CA	US	
Weiner, David Paul	Del Mar	CA	US	
Chaplin, Jennifer Ann	San Diego	CA	US	

US-CL-CURRENT: 435/106; 435/195, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
Draw Desc | Image

☐ 38. Document ID: US 20020001809 A1

L8: Entry 38 of 62 File: PGPB Jan 3, 2002

PGPUB-DOCUMENT-NUMBER: 20020001809
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020001809 A1

TITLE: High throughput screening for novel enzymes

PUBLICATION-DATE: January 3, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Keller, Martin	San Diego	CA	US	

US-CL-CURRENT: 435/6; 435/7.92

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 39. Document ID: US 20010044111 A1

L8: Entry 39 of 62 File: PGPB Nov 22, 2001

PGPUB-DOCUMENT-NUMBER: 20010044111
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010044111 A1

TITLE: Method for generating recombinant DNA molecules in complex mixtures

PUBLICATION-DATE: November 22, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Carr, Brian	Fremont	CA	US	
Yamamoto, Takashi	Fremont	CA	US	
Patten, Phillip A.	Mountain View	CA	US	

US-CL-CURRENT: 435/6; 435/325, 435/7.1, 435/91.1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 40. Document ID: US 20010041333 A1

L8: Entry 40 of 62 File: PGPB Nov 15, 2001

PGPUB-DOCUMENT-NUMBER: 20010041333
PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20010041333 A1

TITLE: High throughput screening for a bioactivity or biomolecule

PUBLICATION-DATE: November 15, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Keller, Martin	San Diego	CA	US	

US-CL-CURRENT: 435/6; 435/252.1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

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Terms	Documents
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☐ 41. Document ID: US 20010034040 A1

L8: Entry 41 of 62 File: PGPB Oct 25, 2001

PGPUB-DOCUMENT-NUMBER: 20010034040
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010034040 A1

TITLE: High throughput screening for novel enzymes

PUBLICATION-DATE: October 25, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Keller, Martin	San Diego	CA	US	

US-CL-CURRENT: 435/29

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 42. Document ID: US 20010034031 A1

L8: Entry 42 of 62 File: PGPB Oct 25, 2001

PGPUB-DOCUMENT-NUMBER: 20010034031
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010034031 A1

TITLE: High throughput screening for novel enzymes

PUBLICATION-DATE: October 25, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	
Keller, Martin	San Diego	CA	US	

US-CL-CURRENT: 435/6; 435/7.21

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 43. Document ID: US 6479258 B1

L8: Entry 43 of 62 File: USPT Nov 12, 2002

US-PAT-NO: 6479258
DOCUMENT-IDENTIFIER: US 6479258 B1

TITLE: Non-stochastic generation of genetic vaccines

DATE-ISSUED: November 12, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short; Jay M.	Rancho Santa Fe	CA		

US-CL-CURRENT: 435/69.1; 530/350, 536/23.2

ABSTRACT:

This invention provides methods of obtaining vaccines by use of non-stochastic methods of directed evolution (DirectEvolution.TM.). These methods include non-stochastic polynucleotide site-satuaration mutagenesis (Gene Site Saturation Mutagenesis.TM.) and non-stochastic polynucleotide reassembly (GeneReassembly.TM.). Through use of the claimed methods, vectors can be obtained which exhibit increased efficacy for use as genetic vaccines. Vectors obtained by using the methods can have, for example, enhanced antigen expression, increased uptake into a cell, increased stability in a cell, ability to tailor an immune response, and the like.

86 Claims, 66 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 61

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

☐ 44. Document ID: US 6455254 B1

L8: Entry 44 of 62 File: USPT Sep 24, 2002

US-PAT-NO: 6455254
DOCUMENT-IDENTIFIER: US 6455254 B1

TITLE: Sequence based screening

DATE-ISSUED: September 24, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short; Jay M.	Rancho Santa Fe	CA		

US-CL-CURRENT: 435/6; 435/91.2, 536/23.1, 536/24.3, 536/24.33

ABSTRACT:

Provided is a method of obtaining a nucleic acid profile of a sample. The method includes creating a DNA library from a plurality of nucleic acid sequences of a mixed population of organisms and sequencing at least one clone in the DNA library. The sequence is compared to a database and identifying sequences in the database which have homology to a clone in the library thereby obtaining a nucleic acid profile of the mixed population of organisms.

30 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 45. Document ID: US 6391640 B1

L8: Entry 45 of 62 File: USPT May 21, 2002

US-PAT-NO: 6391640
DOCUMENT-IDENTIFIER: US 6391640 B1

TITLE: Methods and compositions for cellular and metabolic engineering

DATE-ISSUED: May 21, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Minshull; Jeremy	San Francisco	CA		
Stemmer; Willem P. C.	Los Gatos	CA		

US-CL-CURRENT: 435/440; 435/6, 435/91.2, 536/23.1, 536/24.3

ABSTRACT:

The present invention is generally directed to the evolution of new metabolic pathways and the enhancement of bioprocessing through a process herein termed recursive sequence recombination. Recursive sequence recombination entails performing iterative cycles of recombination and screening or selection to "evolve" individual genes, whole plasmids or viruses, multigene clusters, or even whole genomes. Such techniques do not require the extensive analysis and computation required by conventional methods for metabolic engineering.

225 Claims, 1 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 46. Document ID: US 6361974 B1

L8: Entry 46 of 62 File: USPT Mar 26, 2002

US-PAT-NO: 6361974
DOCUMENT-IDENTIFIER: US 6361974 B1

TITLE: Exonuclease-mediated nucleic acid reassembly in directed evolution

DATE-ISSUED: March 26, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short; Jay M.	Rancho Santa Fe	CA		
Djavakhishvili; Tsotne David	San Diego	CA		
Frey; Gerhard Johann	San Diego	CA		

US-CL-CURRENT: 435/69.1; 530/350, 536/23.2

ABSTRACT:

This invention provides methods of obtaining novel polynucleotides and encoded polypeptides by the use of non-stochastic methods of directed evolution (DirectEvolution.TM.). A particular advantage of exonuclease-mediated reassembly methods is the ability to reassemble nucleic acid strands that would otherwise be problematic to chimerize. Exonuclease-mediated reassembly methods can be used in combination with other mutagenesis methods provided herein. These methods include non-stochastic polynucleotide site-saturation mutagenesis (Gene Site Saturation Mutagenesis.TM.) and non-stochastic polynucleotide reassembly (GeneReassembly.TM.). This invention provides methods of obtaining novel enzymes that have optimized physical &/or biological properties. Through use of the claimed methods, genetic vaccines, enzymes, small molecules, and other desirable molecules can be evolved towards desirable properties. For example, vaccine vectors can be obtained that exhibit increased efficacy for use as genetic vaccines. Vectors obtained by using the methods can have, for example, enhanced antigen expression, increased uptake into a cell, increased stability in a cell, ability to tailor an immune response, and the like. Furthermore, this invention provides methods of obtaining a variety of novel biologically active molecules, in the fields of antibiotics, pharmacotherapeutics, and transgenic traits.

15 Claims, 6 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 6

☐ 47. Document ID: US 6358709 B1

L8: Entry 47 of 62 File: USPT Mar 19, 2002

US-PAT-NO: 6358709
DOCUMENT-IDENTIFIER: US 6358709 B1

TITLE: End selection in directed evolution

DATE-ISSUED: March 19, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short; Jay M.	Encinitas	CA		
Frey; Gerhard Johann	San Diego	CA		

US-CL-CURRENT: 435/69.1; 530/350, 536/23.2

ABSTRACT:

This invention provides methods of obtaining novel polynucleotides and encoded polypeptides by the use of non-stochastic methods of directed evolution (DirectEvolution.TM.). A particular advantage of end-selection-based methods is the ability to recover full-length polynucleotides from a library of progeny molecules generated by mutagenesis methods. These methods include non-stochastic polynucleotide site-saturation mutagenesis (Gene Site Saturation Mutagenesis.TM.) and non-stochastic polynucleotide reassembly (GeneReassembly.TM.). This invention provides methods of obtaining novel enzymes that have optimized physical &/or biological properties. Through use of the claimed methods, genetic vaccines, enzymes, small molecules, and other desirable molecules can be evolved towards desirable properties. For example, vaccine vectors can be obtained that exhibit increased efficacy for use as genetic vaccines. Vectors obtained by using the methods can have, for example, enhanced antigen

expression, increased uptake into a cell, increased stability in a cell, ability to tailor an immune response, and the like. Furthermore, this invention provides methods of obtaining a variety of novel biologically active molecules, in the fields of antibiotics, pharmacotherapeutics, and transgenic traits.

36 Claims, 11 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 7

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 48. Document ID: US 6352842 B1

L8: Entry 48 of 62 File: USPT Mar 5, 2002

US-PAT-NO: 6352842
DOCUMENT-IDENTIFIER: US 6352842 B1

TITLE: Exonucease-mediated gene assembly in directed evolution

DATE-ISSUED: March 5, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short; Jay M.	Encinitas	CA		
Frey; Gerhard J.	San Diego	CA		
Djavakhishvili; Tsotne D.	San Diego	CA		

US-CL-CURRENT: 435/69.1; 530/350, 536/23.2

ABSTRACT:

A directed evolution process comprising novel methods for generating improved progeny molecules having desirable properties, including, for example, a method for rapid and facilitated production from a parental polynucleotide template, of a set of mutagenized progeny polynucleotides wherein at least one codon encoding each of the 20 naturally encoded amino acids is represented at each original codon position. This method, termed site-saturation mutagenesis, or simply saturation mutagenesis, is preferably based on the use of the degenerate N,N,G/T sequence. Also, a method of producing from a parental polypeptide template, a set of mutagenized progeny polypeptides wherein each of the 20 naturally encoded amino acids is represented at each original amino acid position. Also, other mutagenization processes that can be used in combination with, or in lieu of, saturation mutagenesis, including, for example: (a) assembly and/or reassembly of polynucloetide building blocks (including sections of genes &/or of gene families) mediated by a source of exonuclease activity such as exonuclease III; and (b) introduction of two or more related polynucleotides into a suitable host cell such that a hybrid polynucleotide is generated by recombination and reductive reassortment. Also molecular property screening methods, including a preferred method, termed end selection, comprised of using an enzyme, such as a topoisomerase, a restriction endonuclease, &/or a nicking enzyme (such as N. BstNB I), to detect a specific terminal sequence in a working polynucleotide, to produce a ligatable end thereat, and to ligate and clone the working polynucleotide.

20 Claims, 1 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 49. Document ID: US 6309883 B1

L8: Entry 49 of 62 File: USPT Oct 30, 2001

US-PAT-NO: 6309883
DOCUMENT-IDENTIFIER: US 6309883 B1

TITLE: Methods and compositions for cellular and metabolic engineering

DATE-ISSUED: October 30, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Minshull; Jeremy	San Francisco	CA		
Stemmer; Willem P. C.	Los Gatos	CA		

US-CL-CURRENT: 435/440; 435/6, 536/23.1, 536/24.3

ABSTRACT:

The present invention is generally directed to the evolution of new metabolic pathways and the enhancement of bioprocessing through a process herein termed recursive sequence recombination. Recursive sequence recombination entails performing iterative cycles of recombination and screening or selection to "evolve" individual genes, whole plasmids or viruses, multigene clusters, or even whole genomes. Such techniques do not require the extensive analysis and computation required by conventional methods for metabolic engineering.

134 Claims, 1 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 50. Document ID: US 6268140 B1

L8: Entry 50 of 62 File: USPT Jul 31, 2001

US-PAT-NO: 6268140
DOCUMENT-IDENTIFIER: US 6268140 B1

TITLE: Combinatorial metabolic libraries

DATE-ISSUED: July 31, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Stuart; W. Dorsey	San Francisco	CA		

US-CL-CURRENT: 435/6; 435/171, 435/254.11, 435/254.21, 435/254.3, 435/254.4, 435/254.5, 435/320.1, 435/440

ABSTRACT:

The present invention provides methods and compositions for producing and screening combinatorial metabolic libraries of multimeric proteins. The present invention relies

on the use of filamentous fingal heterokaryons that are produced using two or more parent strains into which a population of heterologous nucleic acids encoding components of a metabolic pathway have been introduced.

22 Claims, 0 Drawing figures
Exemplary Claim Number: 12

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
Draw. Desc | Image

☐ 51. Document ID: US 6261842 B1

L8: Entry 51 of 62 File: USPT Jul 17, 2001

US-PAT-NO: 6261842
DOCUMENT-IDENTIFIER: US 6261842 B1

TITLE: Microorganism genomics, compositions and methods related thereto

DATE-ISSUED: July 17, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Handelsman; Jo	Madison	WI		
Goodman; Robert M.	Madison	WI		
Rondon; Michelle R.	Madison	WI		

US-CL-CURRENT: 435/479; 435/252.3, 536/23.1

ABSTRACT:

The present invention provides methods and compositions for accessing, in a generally unbaised manner, a diverse genetic pool for genes involved in biosynthetic pathways. The invention also provides compounds which can be identified by cloning biosynthetic pathways.

32 Claims, 7 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 7

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
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☐ 52. Document ID: US 6242211 B1

L8: Entry 52 of 62 File: USPT Jun 5, 2001

US-PAT-NO: 6242211
DOCUMENT-IDENTIFIER: US 6242211 B1

TITLE: Methods for generating and screening novel metabolic pathways

DATE-ISSUED: June 5, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Peterson; Todd C.	Coronado	CA		
Brian; Paul	San Diego	CA		

US-CL-CURRENT: 435/41; 435/320.1, 435/463, 435/468, 435/477, 435/91.41, 435/91.52, 536/23.5, 536/23.7

ABSTRACT:

The present invention relates to a novel drug discovery system for generating molecular diversity. The system provides methods for subjecting the genetic materials from a plurality of species of organisms to homologous or homeologous recombination to create novel genes and metabolic pathways. The recombined genetic materials are cloned to form recombined combinatorial gene expression libraries. Methods for screening such gene expression libraries containing recombined genes and metabolic pathways for novel activities and compounds are also provided.

24 Claims, 27 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 23

☐ 53. Document ID: US 6238884 B1

L8: Entry 53 of 62 File: USPT May 29, 2001

US-PAT-NO: 6238884
DOCUMENT-IDENTIFIER: US 6238884 B1

TITLE: End selection in directed evolution

DATE-ISSUED: May 29, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short; Jay M.	Encinitas	CA		
Frey; Gerhard Johann	San Diego	CA		

US-CL-CURRENT: 435/69.1; 530/350, 536/23.2

ABSTRACT:

A directed evolution process comprising novel methods for generating improved progeny molecules having desirable properties, including, for example, a method for rapid and facilitated production from a parental polynucleotide template, of a set of mutagenized progeny polynucleotides wherein at least one codon encoding each of the 20 naturally encoded amino acids is represented at each original codon position. This method, termed site-saturation mutagenesis, or simply saturation mutagenesis, is preferably based on the use of the degenerate N,N,G/T sequence. Also, a method of producing from a parental polypeptide template, a set of mutagenized progeny polypeptides wherein each of the 20 naturally encoded amino acids is represented at each original amino acid position. Also, other mutagenization processes that can be used in combination with, or in lieu of, saturation mutagenesis, including, for example: (a) assembly and/or reassembly of polynucloetide building blocks, which building blocks can be sections of genes &/or of gene families; and (b) introduction of two or more related polynucleotides into a suitable host cell such that a hybrid polynucleotide is generated by recombination and reductive reassortment. Also, vector and expression vehicles including such polynucleotides and correspondingly expressed polypeptides. Also molecular property screening methods, including a preferred method, termed end selection, comprised of

using an enzyme, such as a topoisomerase, a restriction endonuclease, &/or a nicking enzyme (such as N. BstNB I), to detect a specific terminal sequence in a working polynucleotide, to produce a ligatable end thereat, and to ligate and clone the working polynucleotide.

21 Claims, 9 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 5

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 54. Document ID: US 6177262 B1

L8: Entry 54 of 62 File: USPT Jan 23, 2001

US-PAT-NO: 6177262
DOCUMENT-IDENTIFIER: US 6177262 B1

TITLE: Recombinant host cells for the production of polyketides

DATE-ISSUED: January 23, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ziermann; Rainer	San Mateo	CA		
Betlach; Mary C.	San Francisco	CA		

US-CL-CURRENT: 435/76; 435/252.35

ABSTRACT:

Yields of polyketides produced in host cells such as Streptomyces can be increased by coexpression of the ptpA gene. The introduction of recombinant vectors encoding ptpA and polyketide synthase genes is more efficient and does not require methyl-free DNA if the host cell is a restriction/methylation deficient strain, such as Streptomyces lividans K4-114, K4-155, or K27-39.

13 Claims, 0 Drawing figures
Exemplary Claim Number: 5

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 55. Document ID: US 6174673 B1

L8: Entry 55 of 62 File: USPT Jan 16, 2001

US-PAT-NO: 6174673
DOCUMENT-IDENTIFIER: US 6174673 B1

TITLE: High throughput screening for novel enzymes

DATE-ISSUED: January 16, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short; Jay M.	Encinitas	CA		
Keller; Martin	San Diego	CA		

US-CL-CURRENT: 435/6; 435/320.1, 435/440, 435/471, 435/476, 435/69.1

ABSTRACT:

Disclosed is a process for identifying clones having a specified activity of interest, which process comprises (i) generating one or more expression libraries derived from nuclei acid directly isolated from the environment; and (ii) screening said libraries utilizing a fluorescence activated cell sorter to identify said clones. More particularly, this is a process for identifying clones having a specified activity of interest by (i) generating one or more expression libraries derived from nucleic acid directly or indirectly isolated from the environment; (ii) exposing said libraries to a particular substrate or substrates of interest; and (iii) screening said exposed libraries utilizing a fluorescence activated cell sorter to identify clones which react with the substrate or substrates. Also provided is a process for identifying clones having a specified activity of interest by (i) generating one or more expression libraries derived from nucleic acid directly or indirectly isolated from the environment; and (ii) screening said exposed libraries utilizing an assay requiring co-encapsulation, a binding event or the covalent modification of a target, and a fluorescence activated cell sorter to identify positive clones.

23 Claims, 18 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 16

☐ 56. Document ID: US 6171820 B1

L8: Entry 56 of 62 File: USPT Jan 9, 2001

US-PAT-NO: 6171820
DOCUMENT-IDENTIFIER: US 6171820 B1

TITLE: Saturation mutagenesis in directed evolution

DATE-ISSUED: January 9, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short; Jay M.	Encinitas	CA		

US-CL-CURRENT: 435/69.1; 435/69.7, 435/7.6, 530/350

ABSTRACT:

Disclosed is a rapid and facilitated method of producing from a parental template polynucleotide, a set of mutagenized progeny polynucleotides whereby at each original codon position there is produced at least one substitute codon encoding each of the 20 naturally encoded amino acids. Accordingly, there is also provided a method of producing from a parental template polypeptide, a set of mutagenized progeny polypeptides wherein each of the 20 naturally encoded amino acids is represented at each original amino acid position. The method provided is termed site-saturation mutagenesis, or simply saturation mutagenesis, and can be used in combination with other mutagenization processes, such as, for example, a process wherein two or more related polynucleotides are introduced into a suitable host cell such that a hybrid polynucleotide is generated by recombination and reductive reassortment. Also provided

are vector and expression vehicles including such polynucleotides, polypeptides expressed by the hybrid polynucleotides and a method for screening for hybrid polypeptides.

13 Claims, 2 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
Draw. Desc | Image

☐ 57. Document ID: US 6140486 A

L8: Entry 57 of 62 File: USPT Oct 31, 2000

US-PAT-NO: 6140486
DOCUMENT-IDENTIFIER: US 6140486 A

TITLE: Production of polyunsaturated fatty acids by expression of polyketide-like synthesis genes in plants

DATE-ISSUED: October 31, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Facciotti; Daniel	Davis	CA		
Metz; James George	Davis	CA		
Lassner; Michael	Davis	CA		

US-CL-CURRENT: 536/23.2; 435/69.1

ABSTRACT:

The present invention relates to compositions and methods for preparing poly-unsaturated long chain fatty acids in plants, plant parts and plant cells, such as leaves, roots, fruits and seeds. Nucleic acid sequences and constructs encoding PKS-like genes required for the poly-unsaturated long chain fatty acid production, including the genes responsible for eicosapentenoic acid production of Shewanella putrefaciens and novel genes associated with the production of docosahexenoic acid in Vibrio marinus are used to generate transgenic plants, plant parts and cells which contain and express one or more transgenes encoding one or more of the PKS-like genes associated with such long chain polyunsaturated fatty acid production. Expression of the PKS-like genes in the plant system permits the large scale production of poly-unsaturated long chain fatty acids such as eicosapentenoic acid and docosahexenoic acid for modification of the fatty acid profile of plants, plant parts and tissues. Manipulation of the fatty acid profiles allows for the production of commercial quantities of novel plant oils and products.

3 Claims, 105 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 123

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
Draw. Desc | Image

☐ 58. Document ID: US 6057103 A

L8: Entry 58 of 62 File: USPT May 2, 2000

US-PAT-NO: 6057103
DOCUMENT-IDENTIFIER: US 6057103 A

TITLE: Screening for novel bioactivities

DATE-ISSUED: May 2, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short; Jay M.	Encinitas	CA		

US-CL-CURRENT: 435/6; 435/91.1, 435/91.2, 436/501, 536/23.1, 536/24.3, 536/24.31, 536/24.32, 536/24.33, 536/25.4

ABSTRACT:

Disclosed is a process for identifying clones having a specified activity of interest, which process comprises (i) generating one or more expression libraries derived from nucleic acid directly isolated from the environment; and (ii) screening said libraries utilizing an assay system. More particularly, this is a process for identifying clones having a specified activity of interest by (i) generating one or more expression libraries derived from nucleic acid directly or indirectly isolated from the environment; (ii) exposing said libraries to a particular substrate or substrates of interest; and (iii) screening said exposed libraries utilizing a fluorescence activated cell sorter to identify clones which react with the substrate or substrates. Also provided is a process for identifying clones having a specified activity of interest by (i) generating one or more expression libraries derived from nucleic acid directly or indirectly isolated from the environment; and (ii) screening said exposed libraries utilizing an assay requiring a binding event or the covalent modification of a target, and a fluorescence activated cell sorter to identify positive clones.

33 Claims, 10 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 8

☐ 59. Document ID: US 5939250 A

L8: Entry 59 of 62 File: USPT Aug 17, 1999

US-PAT-NO: 5939250
DOCUMENT-IDENTIFIER: US 5939250 A

TITLE: Production of enzymes having desired activities by mutagenesis

DATE-ISSUED: August 17, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short; Jay M.	Encinitas	CA		

US-CL-CURRENT: 435/4; 435/183, 435/69.1, 536/23.1, 536/23.2

ABSTRACT:

Disclosed is a process for obtaining an enzyme having a specified enzyme activity derived from a heterogeneous DNA population by screening, for the specified enzyme activity, a library of clones containing DNA from the heterogeneous DNA population

which have been exposed to directed mutagenesis towards production of the specified enzyme activity. Also disclosed is a process for obtaining an enzyme having a specified enzyme activity by screening, for the specified enzyme activity, a library of clones containing DNA from a pool of DNA populations which have been exposed to directed mutagenesis in an attempt to produce in the library of clones DNA encoding an enzyme having one or more desired characteristics which can be the same or different from the specified enzyme activity.

12 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 60. Document ID: US 5837458 A

L8: Entry 60 of 62 File: USPT Nov 17, 1998

US-PAT-NO: 5837458
DOCUMENT-IDENTIFIER: US 5837458 A

TITLE: Methods and compositions for cellular and metabolic engineering

DATE-ISSUED: November 17, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Minshull; Jeremy	San Francisco	CA		
Stemmer; Willem P. C.	Los Gatos	CA		

US-CL-CURRENT: 435/6

ABSTRACT:

The present invention is generally directed to the evolution of new metabolic pathways and the enhancement of bioprocessing through a process herein termed recursive sequence recombination. Recursive sequence recombination entails performing iterative cycles of recombination and screening or selection to "evolve" individual genes, whole plasmids or viruses, multigene clusters, or even whole genomes. Such techniques do not require the extensive analysis and computation required by conventional methods for metabolic engineering.

36 Claims, 1 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

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☐ 61. Document ID: US 5824485 A

L8: Entry 61 of 62 File: USPT Oct 20, 1998

US-PAT-NO: 5824485
DOCUMENT-IDENTIFIER: US 5824485 A

TITLE: Methods for generating and screening novel metabolic pathways

DATE-ISSUED: October 20, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Thompson; Katie A.	Del Mar	CA		
Foster; Lyndon M.	Carlsbad	CA		
Peterson; Todd C.	Chula Vista	CA		
Nasby; Nicole Marie	San Diego	CA		
Brian; Paul	San Diego	CA		

US-CL-CURRENT: 435/6; 435/320.1, 435/455, 435/471, 435/489, 435/69.1, 435/91.41, 435/DIG.23, 435/DIG.26, 435/DIG.47, 435/DIG.5, 435/DIG.6, 435/DIG.7, 435/DIG.8, 536/23.1

ABSTRACT:

The present invention relates to a novel drug discovery system for generating and screening molecular diversity. The system provides methods for mixing and cloning genetic materials from a plurality of species of organisms in combinatorial gene expression libraries to generate novel metabolic pathways and classes of compounds. The system also involves methods for pre-screening or identifying for host organisms containing a library that are capable of generating such novel pathways and compounds. The host organisms may be useful in drug screening for particular diseases, and in commercial production of compounds of interest. The methods of the invention are also useful in preserving the genomes of organisms that are known or prospective sources of drugs.

45 Claims, 25 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 21

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. Desc | Image

☐ 62. Document ID: US 5783431 A

L8: Entry 62 of 62 File: USPT Jul 21, 1998

US-PAT-NO: 5783431
DOCUMENT-IDENTIFIER: US 5783431 A

TITLE: Methods for generating and screening novel metabolic pathways

DATE-ISSUED: July 21, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Peterson; Todd C.	Chula Vista	CA		
Foster; Lyndon M.	Carlsbad	CA		
Brian; Paul	San Diego	CA		

US-CL-CURRENT: 435/455; 435/320.1, 435/463, 435/466, 435/471, 435/472, 435/474, 435/489, 536/23.1

ABSTRACT:

The present invention relates to a novel drug discovery system for generating and screening molecular diversity. The system provides methods for mixing and cloning genetic materials from a plurality of species of organisms in combinatorial gene expression libraries to generate novel metabolic pathways and classes of compounds. The system also provides mobilizable combinatorial gene expression libraries that can be transferred from one species of host organism to another for expression. Also provided are specialized cloning vectors for making mobilizable gene expression libraries. The system also involves methods for pre-screening or identifying for host organisms containing a library that are capable of generating such novel pathways and compounds.

25 Claims, 27 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 23

WEST Search History

DATE: Friday, November 15, 2002

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L9	L8 and desired activity	0	L9
L8	L6 and (polyketide synthase or polyketide synthetase)	62	L8
L7	L6 and polyketide synthase	62	L7
L6	L5 and (mutat$5 or varigat$5)	735	L6
L5	L4 and (bioactivity or biomolecule or enzyme or polyketide synthase)	1018	L5
L4	environmental same (sample or source) and library	1416	L4
L3	envirnmental same (sample or source)	0	L3
L2	envirnmental same (sample or source) and library and (bioactivity or biomolecule or enzyme or polyketide synthase)	0	L2
DB=USPT; THES=ASSIGNEE; PLUR=YES; OP=ADJ			
L1	('5849491')[PN]	1	L1

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